

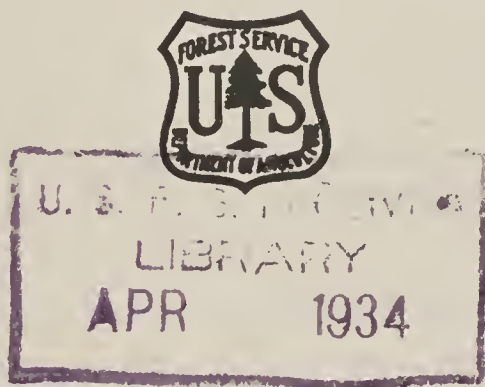
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NO. 13

NOVEMBER 15, 1932

EXECUTIVE AND PERSONNEL
MANAGEMENT
ON THE
NATIONAL FORESTS



A MEDIUM FOR THE EXCHANGE OF IDEAS AND
EXPERIENCES BY OPERATING EXECUTIVES
FOR THE BETTERMENT OF THE
SERVICE

CONFIDENTIAL - FOR SERVICE MEMBERS ONLY

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OUR 1932 DISCUSSIONS

By P. KEPLINGER

In November a year ago we began to experiment with new methods in our all-service discussions. Before that time we had had somewhat formal study courses in which we read general management literature and discussed its application to our own problems; but in addition to that our discussions helped us to summarize and capitalize our own experiences and to learn from similar experiences of others. However, you remember all that.

A year ago I asked you to consider some changes in method which would make our studies more flexible and thereby allow us to keep them closer to current problems. Your response was very fine indeed. I have tried to carry out your suggestion, and this month I am asking you to review results and help plan for the coming year.

In addition to the general objective stated above, from the Forester's instructions and from your suggestions I have for my own guidance, formulated a number of secondary objectives. These are: First, of course, to make the publication of interest and value to field men, particularly Supervisors; to make it a medium for the development of new ideas; to give men a chance to help each other; to help supervisors to keep informed on general management literature. Commenting briefly on the last—men outside the Service who have seen your discussions are invariably surprised that government executives should be as interested in and as well informed on modern management as your discussions show you to be.

A number of changes in method or new ways have been tried during the year, none of which are really vital to our objective. Any of these may be changed. It is difficult for me to tell what you like or what is of value to you. So I am going to review some of the innovations, or changes, from the past, and ask your opinion of them. If you prefer some other method to any one of these it can be changed just so long as the change does not interfere with our objective or with my instructions from above. The latter is not likely.

1. The first thing I want to mention is distribution and participation. In our old courses we had various restrictions. Once, only men designated by the Regional Foresters could participate; at other times others. Two years ago a letter was interpreted by Regional men to mean that they should keep out. All of these restrictions have been removed. When the first number was published a year ago, the Forester himself, in Service committee, announced that copies would be sent to all Supervisors and to such others as desired and would use them. There were no restrictions placed on participation in discussions. The distribution other than to Supervisors within a Region has been left to the Region, since the Regions pay for what they get. Since the unit cost decreases with the number printed there is no particular reason to restrict the use. On the other hand, nothing is gained by sending copies to anyone who makes no use of them. Distribution is made by Haynie direct from Ogden. Get as many as you can use.

2. In the old courses I wrote the lessons; in the method now in use the problem for discussion is written up by a field man. The reason for this change was the belief that one closer to the field could better sense the problem and the field point of view. The method seems to have been very well received. It has its difficulties, however. I have no satisfactory way of finding out who would like to write on what subjects. If I knew all of you and could see you occasionally we could get along very well. Another difficulty is that so few of you can participate. There are only twelve numbers or so a year and two or three hundred of you.

3. I have tried publishing two or three papers for discussion at one time. This hasn't seemed to work. My feeling is that one at a time gets best results.

4. We have tried putting up subjects for discussion without an introductory paper to start the discussion. The response has not been great. The method does not seem desirable.

5. I tried publishing a paper by a ranger and inviting ranger discussion. It was a good paper and attracted considerable attention but no response from rangers. The method appeared to have possibilities, but didn't work. Possibly I should have tried again, and possibly I was entering too wide a field.

6. There has been more discussion by me of your discussions but no comments on individual papers. My impression is that you have not objected to this.

7. We have published discussions in the same pamphlet with the new problem for discussion. There was some objection at first but now I think you like it. What do you think?

8. Instead of trying to secure enough copies of outside articles for you each to have one, or recommending books for you to purchase or look up, I have tried to pick articles of interest and brief them for you. I have tried also to find something related to the problem up for discussion. In doing this I have not tried to give a review of the article so much as I have to pick parts of greatest interest to us. This may be somewhat unfair to the writer as my brief may change his points of emphasis. I have been told also that sometimes it is difficult to separate the article from my personal comments on the subject. If others have this trouble I should separate my comments completely or leave them out entirely. In spite of the objection, my impression is that you like the new method best and want to continue the "Reviews".

9. Sometimes I have included a review of general interest in addition to the one or ones related to our subject for discussion. Would you prefer to have these omitted? My impression is that a limited number are all right.

10. There has been no regular period for publication. We have published twelve copies during the year but at intervals varying from three weeks to three months. I believe you would prefer a regular time for publication but that has some disadvantages, too, especially when one is so far away from his printer. Also there is a difference in seasons. What

do you prefer?

11. Perhaps the greatest innovation has been to continue the "lessons" through the field season. This has not been an experiment on my part but a response to instructions. However, I believe the summer numbers have been very well received. As near as I can tell, you have been glad to get them but have objected to writing for them. This has greatly reduced their value. The method depends on your discussions. Without them it fails.

For, as you know, your discussions have attracted a lot of attention and favorable comment from outside the Service. They have received favorable comment from the President's Council of Personnel Administration, from industrial experts and others. (See page 8 of the Service Bulletin for June 6, 1932.) And it is always your work, not mine, that attracts attention. That is all right, too, for any business executive knows very well that he can hire a man that can do my part better than I can, but he does not know where he can get a whole group of executives that ranks with our Supervisors. That is by no means a simple matter, as any Personnel executive can tell you.

For this reason I am worried about the way in which your discussions have fallen off. Not just during the summer. That was to be expected. But some men who used to write regularly have stopped entirely. Why is it? Wish I knew. However, I am not going to urge upon you to write. If you don't do it because you want to, I'm afraid it isn't worth while anyhow. You must do it voluntarily to do your best. There must be a reason for the falling off of interest. Hope these discussions will bring out the reason and how to regain your interest.

12. Under the old system either I or my boss chose the subjects. This year they have been practically all, I believe all, of your choosing. Of course, I have chosen from among your suggestions, and I still have a number left over. But I believe it time to make up a new list. So, I'm going to ask you again, what are the problems you would like to discuss?

13. In the old study courses I kept a record of your participation and reported twice a year to the regional foresters on the number of discussions you sent in. That record has been discontinued. It may or may not have been a good move.

14. In the old courses I made considerable use of actual service cases as examples and illustrations. That has been almost entirely discontinued. I have too few field contacts to collect the cases. If it is a good idea we might arrange for some of you to send in cases. In fact I didn't get near all of them first hand in the old days. I always have had good cooperation.
New Methods that Have Been Suggested.

1. It has been suggested, and I have agreed to give it a try, that we run a "*Questions and Answers*" department. To make that a success someone will have to ask questions and someone else answer them. I have promised to do neither. However, I could, I think, usually get someone here to do the answers.

2. Publish papers of informational value but not necessarily for discussion. This sounds attractive to me. I have two or three such papers

now that I might use, in fact plan to use. One is the result of an administrative study. I should like to publish a number of that kind. I know there are a lot of them of general interest, but I don't know just whom to ask.

The only limitations on subject matter are that I am not supposed to use papers of general interest, such as the Service Bulletin publishes, or technical articles. We must stick to our subjects, executive or personnel management.

3. Special numbers for special groups, as for example, a number for assistant supervisors.

4. A planning staff of field men to help plan our year's work or program. This would be fine if the staff could get together, but doing it by correspondence has its drawbacks. I don't know; it might help.

5. That I review subjects rather than articles. This sometimes would be a more difficult and sometimes easier, also in some ways not so valuable. It is well to know men as well as subjects. For example, when the list of industrial experts chosen as advisers to the Personnel Council was published you were familiar with all but one or two names. There is scarcely another organization of equal size in the country that can make the same claims for its executives.

This pretty well covers the things we have done and a few suggestions for the future. What I would like to have you do is to check up on my impressions as to what has succeeded and which has failed. My instructions are to make these studies of interest to you, but my contacts with you are limited. What does interest you?

REVIEWS

SELF EDUCATION FOR MANAGEMENT. By C. S. Ching, Director of Industrial and Public Relations, United States Rubber Company

The above subject is that chosen by Mr. Ching as the title for his address in reviewing the work of the American Management Association under his leadership as president. The address was delivered on his retirement from that office. The significant fact, however, is not the presidency but the choice of "Self-education" as the term best expressing the objective of this the largest and most influential of management associations.

The address is concerned largely with an explanation and justification of new divisions. As the work of the association develops it broadens its scope. The broadened scope, with ever increasing interest in technique, requires subdivisions in order to cover the field. For example, personnel is of interest to all executives. Personnel had been discussed in the general management conferences as well as in each division. Office personnel problems were discussed in the office executives division, production personnel in the production division, and so on. But there was an increasing demand for more discussion of personnel technique. The general management meetings could not give it the time, so a new "personnel division" was created. This takes nothing from the other divisions, which will continue to discuss their own problems, but is something added to that. And so on for four other new divisions.

But as I said before we are not concerned with these features of the address, but are interested in its general attitude, and with some particular statements of Mr. Ching. In the first place, here is an organization of more than four thousand members, practically all successful business executives, to think about it. To revive interest requires a drive which amounts to the contest idea. The contest idea gives the necessary publicity and interest and improves the quality and quantity of ideas. On the other hand, ideas may be lost because men won't turn them in while no reward is offered.

Systems are usually administered by a committee. Sometimes the workmen are represented and sometimes not. The larger companies usually have a man or two that give their full time to the study and investigation of suggestions. Some pay a per cent of the saving effected during the first year, while others have a scale of values. Publicity is usually considered a necessary part of the reward. Publicity also helps to keep up interest.

It is generally considered that the attitude of management is the most important success factor. If the higher executives have a real interest, the foremen and junior executives will also. Where officials all are interested and take notice the workmen are very apt to follow. Any man likes to have his suggestions taken seriously and appreciated if of value. Interest on the part of executives is more important than a money reward, although that too seems necessary. After adequate rewards comes adequate publicity and after that adequate records and simplicity of plan. With these five factors success is almost assured. Any group of men has ideas. The problem is to get them out in the open where they can be examined.

Among the companies that successfully use a suggestion system are many well known names such as the Eastman Company, the Dennison Company, Bausch and Lomb Optical Company, General Electric, Goodyear, and many others. The savings reported by one company over a period of six years was \$140,000. In general, about ten to twenty per cent of the suggestions submitted are adopted.

In the Forest Service we have not had a formal system, possibly we should, but we have depended on suggestions from everyone. In general the attitude has been mighty fine, but occasionally you find a man who doesn't seem to understand. For example, I remember being with a ranger who explained to me the need for some improvements in handling his district. I asked him if he had ever sent his ideas in to the Supervisor. He said no, that two years ago he had made some suggestions and nobody paid any attention to him, and he wasn't sending in any more; he didn't try to horn in where he wasn't wanted.

I told him that that system would never get him anywhere or the Service either; that he ought to keep coming; that if he had a good idea, about the fifth time he suggested it somebody would begin to take notice. One cannot expect to have all his suggestions approved, or even a tenth of them. Not even all one's good ideas will look good to the other fellow. If ten per cent of my suggestions had been approved, the Service would be quite a different place today, yet some have been and I'm doubly thankful now that some have not.



EMPLOYEES' SUGGESTION SYSTEMS. By Policy Holders Service Bureau, Metropolitan Life Insurance Company, New York

In reviewing this report in this number I am not intimating that our discussion studies are in any sense a "suggestion system", although it does perform some of the same functions. For example, Clark's paper in No. 12 suggested a method for dealing with an important range problem. Almost every discussion submitted makes some worthwhile suggestion.

"Modern business success depends, to a large degree, upon the extent to which profitable ideas are procured, developed, and applied." Realizing this many modern industries have adopted some systematic method of inviting employees to suggest improvements in either methods or equipment and for rewarding them for doing so. The system does not apply to the higher officials, since the study and improvement of method is a part of their regular job. The direct value of such a system is in the number of worthwhile suggestions received. The indirect value comes from improved morale, increased interest, study and training. Some use them also as a guide to eligibility for advancement. Some officials claim that the intangible values are greater than the direct.

The first record of such a system was in 1886. The first still in use was started in 1894 by the National Cash Register Company. The idea made little headway previous to 1912. Since 1920 its use has become general among the more progressive organizations. There are now about 300 known

to be using some form of the plan.

There are two types of plans in use: the continuous and the contest. Some companies combine the two. It is argued by some that the continuous system soon becomes ineffective. After the new in worn off employees cease but here united with the avowed objective of learning more about executive management. The organization is divided into nine divisions, and a research institute. Each division holds a conference each year and in addition there is a general conference. This makes ten conferences, of from one to three days each, a year. After all of this study by experienced executives for the last eight years, Mr. Ching says: "When we think of the opportunities ahead for the Association in the field of business administration, opportunities which have not yet been touched—when we think of the limited way in which we have only scratched the surface of these problems, the opportunity ahead for those who lead the Association appear almost appalling."

Contrast this with the prevailing idea of only ten years or so ago that executive work was only a matter of common sense and experience and that there really wasn't anything to it to learn. A good man with a little experience would make a good executive. Less than ten years ago, when it was proposed to introduce courses in management in College, a group of College professors discussed with considerable doubt whether or not there really was any subject matter to teach.

Another thing that interests me is the Association's position with regard to resolutions. Ching says that the association has been criticised because it does not stand for anything; that it does not take a stand on public questions. This is the result of a deliberate policy. The association is not trying to reform its members or to force any particular kind of practice. While business men would not accept such leadership or instruction, they can be self-educated and can help to educate each other. "They cannot be forced to drink at the fountain of all sorts of bright ideas", yet they are interested in the cooperative educational program of the association as shown by their membership and contributions. While each is primarily interested in what he himself can learn, all are interested in the fact that "they are contributing to the success of business and also to the social and economic needs of America."

As in all cooperative efforts the members help each other. From the experience of others each gets new ideas which he uses in the development of his own job or business. But that is not "self-education". That is being educated by others. The self-education comes from their own efforts—from their own contributions. As Mr. Ching puts it in one place: "The small contribution which I have been able to make toward its success has provided me with ample compensation through a wonderful experience."

Now it is of course a far cry from the American Management Association to our own little management pamphlet, but after all is not our objectives somewhat similar? We too are interested in management, anything about the science or art of management that we can apply to our own jobs. For first of all, our first interest is to do a good job ourselves. We are

also interested in the cooperative idea of helping each other. I have learned a lot from your contributions and I hope you have gotten something out of mine. And I wonder if you wouldn't all agree with past-president Ching that for your own contributions you have received ample compensation. In saying this I am not forgetting the time and effort which I know many of you have put on your contributions.

SUGGESTIONS FOR DISCUSSION

What I want you to do is to discuss what we have been doing and help me to plan for the future. I almost said "discuss frankly", but in spite of the fact that it is much used, I thoroughly dislike that term. It implies something. How are Service men in the habit of discussing things, anyhow? (That is just one of my complexes that I should have kept out of this.) The past can serve merely as a guide to help us to avoid mistakes. What shall we make of this project in the future? Perhaps you will say that that is my job. In a way it is, and if I had more direct contacts with you I do not believe that I would need to make this indirect appeal, but even so you would like to have your part in planning it.

In connection with this question, consider also the first paper which I have reviewed in this number. In that paper Mr. Ching says that in the Association he is discussing his greatest benefits have come from what he has contributed—work done for the Association. That is probably so, but in so large an Association all cannot contribute to the same extent. The same principle is true of our studies. If each one of you wrote something each time I could not publish all of your papers, but if no one writes for any one time the whole thing flops. How are we going to regulate our contributions? Who has an idea?

The following questions are not intended just for formal answers, but to suggest subjects about which you may want to express an opinion. Do not confine yourself to them. The dominating question is, what do you want to make of this project?

QUESTIONS

1. Do you check with me on the methods that have succeeded or failed in the past?

2. What new suggestions have you for things to try in the future? Do you want more reviews? More papers by supervisors? More participation by deputies? More discussions from the Regional offices? More subjects from Branches other than Operation? A regular publishing date? A shorter time between the question and its discussion? More or less of anything that you think will help?

3. Can we maintain the discussion feature—the one thing that has made our studies outstanding? Is it worth keeping up if it settles down to a discussion by a few, with the majority keeping out? Discuss this "frankly" if you like.

4. How am I going to find out who has something of interest to discuss? No one volunteers anything. (I have had some good cooperation from the field, and this will probably develop, but your suggestion may help not to overlook things.)

5. Most important of all, suggest subjects for study and discussion. I have two or three numbers planned in advance. I have to do that for your subjects will not be in for a month or two. If you like, suggest some one to write up your subject. Getting the right man and the right subject together is not always easy. However, I don't believe you can accuse me of any mistakes in this last year, but here again I have had help.

May I have your discussions of this number by December 24?

DISCUSSIONS OF LESSON 11.

The use of the plow in line construction, or trenching, is being actively pushed by the Regional offices in some Regions, hence I suspect some of you, on first reading number 11, wondered why we should oppose a method being required by those responsible for results. If so, it seems that everyone, on second reading, got the idea. Neither White nor anyone in the discussions discounts the value of the plow where a trench must be dug. A horse is stronger than a man. Where possible, let one do the work. But at the same time don't lose track of the big idea, which is to stop the fire and get it out. In other words, don't dig trench just to dig.

But looking at this question from another point of view, it seems to me that we are now in the process of creating a new science—the science of fire control—and are doing it in the same manner that other sciences have developed. First we accumulate a volume of experience gained in doing the job as best we can without technical knowledge. We use things learned by experience, on future jobs, and when enough experience has accumulated we begin to analyze our experiences to try to discover principles or outstanding phenomena which may be used as guides. Armed with our deductions we begin to test them out, that is, to experiment in a small way and observe results. On some such basis each experienced man has developed his technique, or method. And each man is dead sure that he is right, that his way is the way to fight fires.

To come back to our comparison: has not highway engineering developed in the same manner. Men built roads because they had to. Each man learned from his own experience. Later they combined experiences and developed principles. With these principles as a base they began to experiment. Progress then became more rapid, but the end is not yet in sight. However, it has now developed far beyond the point where a man can become a highway engineer with only his own experience as a background.

Or take electrical engineering: In the time of Franklin and his kite men were just beginning their first little experiments. No one man on his own experience could ever have gone very far, but through the development of principles and learning from each other they have gone a long way. And the funny part of it is that some of those early writers, even back in Franklin's time, seemed to think they knew the whole story.

If my analogy is correct, we are now in the early stages of the process of combining and integrating experiences. Our boards of review have been one of the biggest factors in this process. A new factor, and to my mind a very effective one, is the "foreman conference" that has lately made its appearance in some regions. Such open-minded analysis of fire problems cannot help but get results. In addition, we now have each winter various analyses of the season's methods and results.

Also we are beginning to experiment in a small way, but mostly as individuals. For example, a foreman said he didn't believe much in the shoestring trench idea, but just thought he would try it out. He did, and just managed to close the gap in time. Had he dug an 8 inch trench the

fire would have been gone. A ranger wanted to try out this idea of fighting a big fire by "smoke chaser" methods. So he strung out 20 men around the entire head of a hot fire at night and with a heavy wind. He assigned each man his individual small fire (from two to five chains of fire front) and let him fight it direct as he would a fire of that perimeter and with the same personal responsibility for holding it. They held it. The Supervisor said: "It was in heavy windfall, and if that crew had been put to clearing and trenching as a group by ordinary methods the fire would simply have walked off and left them." And hundreds of other individual tests of new (or old) ideas. But what we do not have is the systematic planned experiment with controls and records, so as to make the results of the greatest usefulness in the future. As someone said in his discussion, "a chance to test methods without the responsibility for chains of held line." Do we not have areas where we could afford to sacrifice a few thousand acres in order to learn how to save more acres somewhere else? Still, as someone else said in his paper, as long as we have an open-minded, questioning attitude, with "free speech" and free-for-all discussions, we are going to continue to advance anyhow. As I said in number eleven, we are due for a lot of progress in the immediate future. However, let us not get complacent. We could still use some more systematic studies. (I refer to methods studies, not to equipment studies and others of that type, some of which have been outstanding.)

P. K.

H. T. GISBORNE NORTHERN ROCKY MOUNTAIN MISSOULA, MONTANA

Pertaining to W. W. White's Gas Bomb on the "Plow and Horse".

So long as we have men in the Service with the ability to question everything intelligently, or reasonably so; so long as those men have got the guts to broadcast their questions regardless of the origin or age of the creed that they doubt; and so long as there is some way or some person able to disseminate these reasonable questions, things aren't nearly so bad as they might be. Fires may continue to burn trees, and Congress may make some more cuts, but while the free-thinkers and the free press both live the game is still worth the candle grease.

After the pencils have been worn short and the Service allotment of paper has been exhausted cussing and discussing plows, it seems to me that the conclusion is likely to be:

Under certain conditions plows can be used more effectively than man power to check the spread of fire. Under other conditions fires can be controlled most effectively by the use of man power and hand tools. Pumps likewise have their place in this scheme. Personal preference for any single method, resulting in reluctance to use other methods, should be recognized as evidence of poor tactics of suppression. Good tactics include the use of all three methods, each where it will definitely stop the spread of fire edge more quickly than the use of any other method. Good management provides the facilities for prompt use of any method.

The "heretics of the Choctawhatchee" are not building orthodox fire trenches!

This is due to two reasons—(1) Years of protective burning have virtually eliminated a forest floor in the "high country" (100 feet above sea level), as most of us know it; (2) In the swamps a trench dug toward mineral soil often meets water before it contacts mineral soil.

In most cases swamp fires are extinguished by the Pacific Pumper, which will flood the "floor" and extinguish most ground fires, but in some instances we must trench. The method used depends on weather conditions.

In the "hills" we fight fires with tank trucks, equipped with power pumps and hose, which are driven along the fire line, preceded by a "nozzle-man" who walks along "squirting" water on the burning line. The truck is followed by four to six men who rake the smoldering embers back into the burned area a few feet. Small break-overs behind the truck are checked by a man equipped with a back-pack spray pump. The mop-up crew follows next and these men fell snags, and drag all burning debris inside the burned area at least 300 feet from the edge of the fire.

For some time we considered a tractor and plow outfit, loaded on a truck and trailer for transportation to fires. We even worked up estimates of cost, but we believe the fire truck, as now developed, surpasses the tractor and plow, because it eliminates the necessity of additional technical personnel, which we cannot finance now.

Why all this sermon? Just to agree with the axiom of openmindedness and fitting equipment to needs. It is not intended to condemn the plow units, since we do not know much about them.

White's point, relative to the overdevelopment of a method or standard, can be extended to other Forest Service technique. The Forest Service has often become "too sold" on one method, but this is often one of the weaknesses of standardization. In every system it must be recognized that there exist pros and cons. No system is ever 100 per cent pure, and ultimately we chose a system because the good obtained therefrom far exceeds the accompanying evils. If events prove contrary, a change is in order.

At present we are striving for lower annual acreage burned, and it seems mechanical equipment is a great aid toward accomplishing this end. The cost we pay for this, of course, must be considered against the damage sustained, but I'm not intelligent enough to settle it definitely now. Be that as it may, it is cheaper to operate a muzzle loading rifle than a machine-gun, but which gun wins the battle?

There are undoubtedly places where plow units are impracticable, and why is it not possible to discover those areas in advance of a fire and plan the use of plow units accordingly? The tank trucks, which we are "so sold on" here, would prove a total loss in the mountains. In fact they are seldom used here to directly extinguish a swamp fire—the Pacific type pump is used. If some misguided Ranger used a fire truck to a disadvan-

tage in a swamp fire, I must confess I would not condemn the truck. I would condemn myself for not having taught the Ranger better.

P. A. THOMPSON

CASCADE

EUGENE, OREGON

I am intensely interested in this subject. As far back as 1911 we used plows on fires in northeast Washington, Colville, N. F. Almost every year since, upon some fire, I have used or attempted to use, horses and plows. Results have, with very few exceptions, been disappointing. This was partly due to the fact that we have seldom had proper horses and equipment. More often, however, it was due to some one or more of the disadvantages of the plow mentioned by White. A plow unit is not versatile and mobile. It is seldom where you want it when you want it. The plow cannot hot spot, cold trail, use direct method or mop up. (The more I fight fire the more I prefer *direct* attack wherever it is possible.) Difficulty and delays occur getting plows around safe spots and natural barriers. A great deal of additional clearing is necessary. And finally I concur with White's opinion that:

a—Seldom does more than one-half the perimeter of a Class C fire *need* trenching.

b—Seldom does more than one-fourth the perimeter need trenching to control the fire—very often less than 25 per cent.

When either indirect or parallel methods of trenching is used all material inside the lines must be burned out. This takes time and man power. These corners and strips of unburned material will seldom burn clean during the time of day we want them to burn; then they burn too readily during the bad part of the day. Many a line has been lost because heat or sparks from backfires caused trouble.

We recently fought a 600 acre fire which burned in old growth Douglas fir, second growth Douglas fir, old burns and some open grass. About half the fire was trenched, principally parallel method. Along one-half the trenched sectors the fire never reached our trenches and we had great difficulty in backfiring these strips of unburned material during the night and morning hours. Some strips were never burned; we found it easier to cold trail and use direct method *after using up valuable time trenching and trying to set backfires.*

This same thing has happened more or less on every big fire I've ever fought.

Along one side of this same fire we were short of men. I found one experienced man and put him to cold trailing and working hot spots with three helpers. They handled a mile or more of line, some very bad and some easy going, by noon and a small crew later in the day mopped up all fires within 50 to 200 feet of fire edge. This was the most effective piece of work on the entire fire.

A plow can make trenches faster than twenty-five or fifty men perhaps, but the fact remains *we do not need trenches over perhaps 50 per cent of the fire front.*

To answer Mr. Keplinger's questions:

1. Where trenches are needed or where backfiring can be easily and quickly and effectively done, plows can build trenches quickly—as in open yellow pine types.

2. Altogether too much trench is dug on the average fire. It has been overworked.

3. I agree with White's opinions, a—b & C.

4. Training and experience. In our training camp fires we have dug trenches and emphasized technique of handling fires using trenches and backfires. Cold trailing training has been pretty much overlooked.

5. Easy—feel with bare hands every inch of fire line.

6. Yes.

ROY A. PHILLIPS

NEZPERCE

GRANCEVILLE, IDAHO

1. As regards the speed with which fire trench can be plowed as compared to other methods of construction, there can be no question: That has been well demonstrated in practically every timber type and every topographic and soil condition. Time studies have determined that from 15 to 60 men are necessary to cut the right of way for one plow team depending on whether the fire is being fought in open yellow pine or the most difficult site experienced, old burns in the white pine type.

2. I think it is generally true that the need for trenching has been over emphasized. The time of the day a fire is being fought determines almost entirely how wide a trench if any is needed. Trench construction at night or in the early morning or late evening may be of very scanty proportions and may often be entirely dispensed with. The dryness of the duff and trash on the ground may determine the depth, width or need in fact for a trench of any kind. Extreme drought conditions in Alpine stands may require trenching through bear grass although the need for trenching during average seasons is wasted effort, as bear grass burns readily only when burning conditions are acute due to a combination of extremely low humidity and practically no duff moisture.

Inspectors are probably too prone to judge the work done by some set standard of measure as for instance it may be decided that fire trench 8 inches wide and down to mineral soil is in the inspectors judgment what is desired and he may be inclined to arbitrarily decide that anything over or under those specifications is all wrong regardless of what actual burning conditions were at the time the line was put in or what had taken place in the course of mopping up operations.

3 (a) Depends entirely on burning conditions what perimeter of any fire needs to be actually trenched. Topography may have a lot to do with it. In steep country some sort of trench may be necessary to catch coals, burning pine cones or other form of burning debris. Relative humidity, duff moisture and the amount of inflammable debris in the nature of duff, rotten wood, leaves, pine needles, etc., on the ground will determine the need for trenching as well as for mopping up. In fact adequate fire fight-

ing tactics can be said to be based 90 per cent on what a fire will do under certain specified weather conditions that can be fairly accurately gauged by anyone with a reasonable amount of fire experience, and 10 per cent on technique such as width of fire line, etc.

(b) I firmly believe that most fires could be put out without any continuous trench being built if trained men of the type of our regular protection men were available in sufficient numbers to surround the perimeter of a fire with each man taking over a section of from two to ten chains depending on the fuel type encountered. With every man working the actual edge of the fire very little trench would need to be constructed and fire fighting would be almost entirely in the nature of a mop-up job.

(c) In burns under 30 years old there is usually no duff and very little highly inflammable debris in the nature of trash on the ground is present. Generally a cleared line will stop the fire unless the ground is steep enough for burning embers to roll down the hill.

4. With the type of men employed on large fires the matter of producing the right mental attitude is hopeless. Even the trained forest officer reacts variously under the stimulus of fire excitement and does not always use sane cool headed judgment in the things he does as manning a fire, trench construction, mopping up, etc. If results could be measured in cost in dollars and cents per unit of effective work accomplished no doubt the work necessary to dig an effective fire line would more nearly approach the ideal.

It is also very true that hardly if ever do any two fires call for the same plan of action. Crew organization, plan of attack, mopping up, even trench construction may vary greatly. Versatility in making adjustments, scrapping old ideas, and putting new ones into operation in fact ability to cope with the unusual at all times is essential in a fire boss. He must know instinctively what line or sections of line he must sew up without delay, where trench must be put in and where cold trailing will suffice. In rare instances power pumps or other special equipment may be needed. Last but not least he must be able to tell when the fire is under control and start cutting down the expense by laying off men. I have had more trouble in this than almost any phase of fire fighting—the tendency is to hold men for fear the fire would get away.

Mental attitude is responsible in most cases for digging trench by hand when one can be plowed for less than \$10.00 per mile, at which cost it does not matter materially if some extra trench is plowed unless as White states it is necessary to cut a lot of logs to get the plow through.

5. The only sure way I have ever found to determine whether there is any live fire present is to painstakingly examine each section of the burned exterior with the bare hand for hot spots and this is the method I have used in instructing fire fighters and while not infallible is generally successful.

6. There is a definite need for an administrative study project as regard the need for fire line construction and as to whether a fire cannot be successfully fought without any trench and operations conducted in the

nature of a mopping up job. We do just this with our regular protection force and any smokechaser who has a hot fire to handle worked the exterior of the fire checking the hot places until he has it under control. If he were not instructed to trench fires in all cases many fires would undoubtedly be put out without necessity for a trench. While a trench may not be absolutely necessary in all cases where small fires are involved it is a very desirable precautionary measure in the event there is some smoldering spark that has been overlooked. In the case of a large fire a crew is kept on for days even when entirely trenched and a few smouldering places are not serious as a crew is on the ground to take care of any outbreak that might occur.

While I cannot agree with White in all his arguments I can agree that much more fire trench is made than is necessary and while the cost of plowed line with a properly organized outfit will average under \$10.00 per mile as has been demonstrated on some of our worst fires perhaps he is right in his contention that right of way clearing is costing too much, how much he does not say, however I know from experience that too much axe and saw work is done on all large fires as well as too much dirt work both in the control of the fire and mopping it up afterward.

J. C. URQUHART

REGIONAL OFFICE

MISSOULA, MONTANA

The article by W. W. White is timely, contains a lot of truth and it is suspected that the strength of some of his statements will serve the purpose no doubt intended.

No longer than ten or twelve years ago many fires in our back country were fought with a small percentage of the men that would now be used under similar conditions, because at that time neither the men nor the facilities for handling them were available. In order to accomplish the maximum with the small number of men considerable attention was given to tactics. The high hazard spots, fire breaks and deterrents were studied both along the line and for some distance back of it. The most dangerous places were worked first, which sometimes necessitated splitting crews into several units. Although fire fighting under those conditions was a real gamble a lot of fires were stopped with comparatively little man power. I used to think that success in fighting fire depended largely upon one's ability to size up the fuel type, exposure, topography, etc., estimate accurately what was likely to happen under conditions which might prevail and organize accordingly. Little emphasis is given that side of fire fighting now and that is the basis for success in the method referred to by Mr. White.

The urge for more speed in control of fires has increased. Facilities unheard of a few years ago make it possible to land large numbers of men and ample equipment on fires with or shortly behind the Forest officer who takes charge. Forest officers concentrate on the organization of men and the production of held line. Fire suppression is now mainly an organization problem and the technique of fire fighting, aside from the organization phase, is given minor consideration. The most dangerous places are not always stopped first. More "smokechaser tactics" should be applied to the smaller class C fires and less of the practices necessarily used on the big

fires with dozens of miles of perimeter. To get the best results consistent with cost, correlation must exist between perimeter, fuel types, local weather conditions and other similar factors and the number of men and tactics used. The degree of centralized or decentralized direction should be in proportion to the ability of either to best correlate such factors.

Each year finds us better supplied with fire fighting equipment. The hand and power pumps, plows and torches which have recently been increasing, both in number and effectiveness are all excellent tools, but all are more or less improperly used. The pump enthusiasts will pump when a shovel or some other tool might serve the purpose at a lower cost. The plow enthusiasts will concentrate on turning out plowed line at the expense of proper handling of the fire as a whole. A torch fan will sometimes burn out line when it might be cheaper and safer to put out all the fire remaining. To get tools and tactics properly used in logical places is a problem.

1. Undoubtedly the plow can speed up trenching tremendously under certain conditions. Since trench or the equivalent of other work will be required on portions of all fires, the use of the plow should be studied and perfected. Figures sometimes quoted indicate that a plow outfit will do as much as twenty-five or thirty men. Some figures on plow work have been arrived at by tests where there was no fire. Although of some value, such work may be likened to synthetic gin. A vital element, required to make it satisfactory, is lacking. Like all other tools the plow has its limitations. The sooner we test it thoroughly, find out its weaknesses, expose them to light and plan to correlate its use properly with other tools, the sooner will its use become real progress. It might be worth while to select 25 men with the same care used in selecting plow shakers and horses, train and direct them in digging *minimum width trench only where and when trench is required* and compare results with the plow.

2. The time, place and purpose of the trench depends so much upon widely varying conditions that no attempt will be made to discuss them all.

Inspectors generally insist upon a trench. Not only do they want a trench but some insist that everything be burned clean from the edge. That is fine under certain conditions, but under others the live spots inside of a line can be put out more cheaply and safely than the burning can be done. Too often backfire will not burn satisfactorily in the morning. Later as the humidity becomes lower it will burn, and whether it proves to be a benefit or a menace depends upon the wind and other factors, the action of which cannot always be foretold. Backfire, like many other "tools" is fine when skillfully handled and the setting is adapted to its use.

In general, trench may be made for the purpose of:

- a. Stopping the spread of fire by causing a break in the fuel.
- b. Catching live coals and other burning debris below a fire on steep ground.
- c. Facilitating travel during mop-up and patrol following mop-up.

I believe inspectors should insist upon the most dangerous parts of a fire being determined and trenched first. The amount, kind and priority

of other trenching should be governed by the numerous factors which influence the need.

Present policy calls for a trench 8 inches wide. Even where that would be sufficient a much wider one is usually made. Why? Lack of proper direction. Lack of proper direction and judgment as to where trench can be omitted makes it generally necessary that, for the present at least, trench be dug. Trench will be made for the same reason that we pay good money to insure our homes and automobiles. We simply can't take a chance on doing otherwise.

3. I believe the estimates given by Mr. White under a, b, and c, regarding the percentage of fire which actually hits the trench, to be about right. The trampling and other work incidental to trenching has its effect, however.

6. In my opinion the questions involved would justify an administrative study provided part of that study could be carried on by experienced fire fighters, on an *actual fire* while free from the responsibility for producing held line. With the plow, anti-plow and other enthusiasts on a real fire, representing average conditions where all would see *identical situations*. I believe the demonstrating, sifting and correlating of ideas and methods would prove worth while.

J. F. CONNER

HARNEY

CUSTER, SOUTH DAKOTA

There has been so much pressure from the top in the past years for the use of plows that an outspoken statement from the field is apt to be embarrassing. If you dote on its merits you are a "boss-yesser" while if you condemn it you are a Bolshevik. There is much to be said on either side and the plow idea like many others which have been discussed in the past twenty years, should be ridden with martingales since there is a tendency for many of us to get so enthusiastic as to pull an idea over backwards. This is a machine age and it should be expected that improved equipment will be developed for fire fighting the same as for trail and road building. There is no question but what the plow speeds up line construction. In country reasonably free from rocks one plow will do the work of 20 to 25 men but I believe you will all agree that 20 men are much more mobile than a plow unit. There is danger that we rely too much on the plow and find ourselves at a fire short handed. As White says, the plow won't watch for spot fires, eliminate hot spots, or do much in getting around rock cliffs or natural barriers.

It is my opinion that too much attention has been given in the past to the character of the trench and in many cases the location has not received proper consideration. I can't believe that a man should be tied down with a hard and fast rule as to trench. In many places a trench four inches wide is sufficient while in other locations where the duff is deep, I like them much wider. It don't have to all be done while controlling the fire. Part of it may be called mop up.

The answer to White's opinions a, b, and c, depends largely upon the season. In 1931 the safest bet was to trench them all. I know of one case

where a kinnikinnic root that had not been cut off carried the fire across the line more than a week after the trench had been dug.

Question 4 is a hard one and I would hesitate to venture a guess as to the answer. It is very important and if we start letting the bars down on trenching it will give a lot of alibis for failures. It is doubtful if anything would be gained by an administrative study. Conditions on the ground are the basis for the decision and much depends on the judgment and experience of the man in charge.

